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TIME FOR INSTRUCTIONAL RESEARCH.

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ALTHOUGH COMMUNITY JUNIOR COLLEGES ARE PRIMARY LABORATORIES OF FORMAL HUMAN LEARNING, THERE IS A SURPRISING SCARCITY OF STUDIES OF THEIR INSTRUCTIONAL EFFECTIVENESS. LITERATURE AVAILABLE IN THE CLEARINGHOUSE FOR JUNIOR COLLEGE INFORMATION INCLUDES DESCRIPTIONS OF INSTRUCTIONAL PROCESSES AND OF INNOVATIVE ACTIVITIES, BUT LITTLE INFORMATION IS PRESENTED CONCERNING THE RESULTS OF INSTRUCTION. AREAS IN WHICH EVALUATIVE STUDIES ARE REPORTED INCLUDE TELEVISED INSTRUCTION, PROGRAMMED MATERIALS, CLASS SIZE, AND VARIATIONS IN INSTRUCTOR TECHNIQUES. TO ATTAIN THE GOAL OF UTILIZING THE BEST POSSIBLE INSTRUCTIONAL PRACTICES FOR STUDENT LEARNING, JUNIOR COLLEGE EDUCATORS MUST HAVE RESEARCH DATA FROM STUDIES WHICH OBSERVE BASIC DESIGN FEATURES. RECENT ACTIVITIES OF THE UNITED STATES OFFICE OF EDUCATION, COLLEGE FACULTIES, AND PRIVATE FOUNDATIONS INDICATE A TREND TOWARD MORE EFFECTIVE RESEARCH. THIS DOCUMENT IS VOLUME 2, NUMBER 4 OF "JUNIOR COLLEGE RESEARCH REVIEW," DECEMBER 1967. (WO)

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TIME FOR INSTRUCTIONAL RESEARCH

With the community junior college's emphasis on instruction, one would assume that the literature would be rich with research on instructional treatments and their differential effects. This is not the case. There is some comfort, however, in the relative absence of such research at other educational levels and institutions. The relative lack of research on instructional methodologies, specifically at the college level, is clearly illustrated in the chapter by McKeachie in Gage's *Handbook of Research on Teaching.*[1]

Although the author (McKeachie) cites some 228 different articles, studies, and experiments since 1913, he states: "Thus the simple principle that knowledge of results facilitates learning is one of the few generalizations clearly supported by research on college teaching." [2] It is also interesting to note that whatever the other generalizations making up the "few" might be, they are not identified in this excellent review and analysis of instructional research literature.

Throughout the chapter comments are included which suggest that the approval and recognition needs of the instructor may have an important bearing on the conduct of instructional research and its interpretations. This is clearly identified in his closing paragraph, which states, "Enjoyment of teaching is important not only for the enthusiasm which the professor communicates to his students but also for his interest in continued improvement. There are important values which are likely to be lost if teaching becomes so routinized and depersonalized that it is no longer fun. The motivated teacher can respond to feedback from his students so as to achieve better and better approximations to optimal solutions to the problems of teaching. As additional information from research accumulates, as better conceptualizations emerge, he should be able to do an even better job." [3] This paragraph emphasizes a strong concern for the instructor and an indication that better ideas and research findings will help him.

The relative paucity of studies on instructional effectiveness is surprising when one considers that schools in general, and the community junior college in particular, are primary laboratories of formal human learning. There are a number of possible explanations. There is, for example, a general assumption that research is badly needed but that someone else is, can, or should do it. Too, instructors are often reluctant to "do research" because the conditions for "good" research cannot be met and their data will be cannibalized by critics.

Schools are, however, much like hospitals—both being characterized by the diagnosis, treatment, and evaluation of human needs, one for health and the other for education. Schools differ from hospitals in that every student gets essentially the same treatment method (lecture/textbook), and treatment failures are explained largely on the basis of student (patient) inadequacies. This is a little like saying that our treatments are fine but we keep getting the wrong patients (students). If medical men had failed to persistently study and evaluate their treatments for disease, "bleeding" could have persisted as a standard treatment routine.

Review: The Clearinghouse collection includes a few documents which consider instructional treatments. Some of these (JC 670-312, JC 670-314, JC 670-315, JC 670-316) are excellent discursive reports on major innovative activities but do not include any specific information on comparative student learning. Other papers report correlations between selected "predictor variables" and course grades, but the conclusions generally recommend changing prerequisites, admissions requirements, or the introduction of a new or modified course content. One of these (JC 660-045) does, however, conclude that there was "an implication that these students might profit from learning by oral communication—lectures, discussions, audio-visuals, etc." The statement that a different instructional treatment might produce different results is one of a few apparent recognitions that learning might be improved by improving instructional methodologies.

In one report on Closed-Circuit Television (JC 660-002) the development of a plan for studying its value in producing learning in comparison to other techniques occurred too late to gather useful data on student learning. Although an experimental design (control group) was established, the data collected and reported concerned only student reactions.

Another study of CCTV (JC 660-236) demonstrated that while students reacted somewhat negatively to CCTV in comparison to a live instructor, they learned just as much. Still another study on CCTV (seemingly the most popular medium of research) stated, "In conclusion this study has demonstrated that one clinical instructor using closed-circuit TV and audio equipment can teach *fifteen* students (nursing) just as effectively as his counterpart, using more conventional methods of instruction, can teach *ten* students (JC 660-261)." The importance of examining student learning needs emphasis. The institution's purpose, after all, is to produce learning and, hopefully, in a well-defined direction.

Most of the research studies are reasonably designed and interpreted. One investigates the relative success of teaching writing to larger (56 students) and smaller (28 students) classes (JC 660-101). It concluded that, "... class size up to 56 does not seem to be a significant variable in the learning of writing skills." This finding generally confirms the conclusion of McKeachie,[4] who states, "To sum up: large lecture classes are not generally inferior to smaller lecture classes if one uses traditional achievement tests as a criterion."

Another potentially valuable study, (JC 660-219) conducted over a period of several years, started with a sound research design but grew more and more complex each term, making evaluation more and more difficult. During the first year, the investigator found that the School Mathematics Study Group Programmed First Course in Algebra (Revised Form H) used by students in independent study produced achievement equal to that obtained from using a standard text with teacher-led discussion and lecture approaches. From that point forward, however, evaluation devices were changed, treatments modified, and data collection procedures varied until, in the words of the author, "The lack of design in this experiment was obvious — making it difficult to locate data after the facts which could be used to analyze what difference there was between the two methods of instruction." Here, educators (the author of that report and his colleagues) are shown to be honestly critical of an important piece of research. The staff admitted that with a sample of students, an interested and supportive faculty, and a desire to test, evaluate, and improve instruction, their results must be viewed with skepticism because of research design limitations. Rather than being criticized, educators with this exceptional caliber of courage and conviction should be recognized and encouraged.

One study (JC 670-292) utilized three different approaches in teaching a two-hour unit of one course. The results *suggested* that lectures, in teaching students about data-processing equipment, were about as effective as letting them get "hands on" experience with the equipment and possibly better than using overhead transparencies. This particular study was designed and conducted by an instructor with multiple sections of the same course, and suggests what instructors with multiple sections may accomplish.

Future Direction: In any review of research, one can hardly resist feeling a bit disappointed at junior colleges' limited efforts and results in evaluating their instructional diagnosis and treatments. Yet, there are numerous reasons to feel optimistic about the future. The Office of Education is funding more research with more rigid requirements. Faculty members are showing increasing concern and activity in studying the effectiveness of their practices in achieving learning. Private foundations supporting instructional research seems increasingly likely. A simple tabulation, by year of publication, of the materials cited in McKeachie's review shows 30 studies before 1940, only 13 from the Forties, 61 in the first five years of the Fifties, 106 from 1955 to 1959, and 17 in 1960 alone. While McKeachie did not choose articles to reflect their quantity by year or period, his work does suggest that efforts to study instructional approaches are increasing. Perhaps this growing activity reflects awareness and acceptance of the idea that research on the effectiveness of instruction is as fundamental to education as the assessment of prescriptions are to medicine.

And beyond these general "signs" of interest, it is increasingly evident that most sectors of the community are becoming concerned with the consequences of formal education. The evolution of human values, attitudes, capabilities, etc., is a complex process. Educational institutions, quite correctly, cannot be held solely responsible for crime, mental illness, and immorality — but then, neither can the police, physicians, ministers, or even parents.

Education can, however, be held responsible for utilizing the best possible instructional practices to achieve student learning. To achieve that improvement we must have research data from studies which observe basic design features. For example, there is a widely felt need for research data on the value of programmed materials. Surveys of previous studies help in the interpretation of their potential values and limitations, but what about research by and for the individual college, department, or faculty member?

First, perhaps, research should be encouraged by softening academic appraisals of research designs, and by enhancing appreciation of research efforts. The assessment of the values of programmed material in one unit of one course in one college, for example, produces information of value to those learners, however few. Making the conditions of the study, the data obtained, the statistical treatments used, and the findings known to others, however, allows repetition, replication, and modification until some generalized conclusion about the use of the material in that course can be made. The accumulation of similar data in other courses will eventually permit broader generalization and understandings.

To that end, instructional research should be encouraged that:

a. Compares the effect of specific instructional methods among groups of students differing in prior knowledge, entrance test scores, prior school grades, etc.

b. Compares the relative effect of differing instructional methods on groups of students with similar characteristics.

In addition, junior colleges should:

a. Utilize the counsel and guidance of faculty in mathematics, psychology, statistics, counseling, etc., who may provide helpful suggestions on study design, data collection techniques, data treatment procedures, and appropriate interpretations of findings.

b. Publish such findings or distribute them through the Clearinghouse, noting experimental limitations and cautions about interpretive generalizations.

The use of the professional staff or senior institutions, specialists from the Office of Education, and other external resources will substantially enhance research potential and productivity.

Finally, there is a widely communicated conviction among junior college administrators that they have instruction equal to, if not better than, that in senior colleges and universities. This view is held because "the junior college faculty is not hired to do research." To confirm this opinion, the faculty *should be hired to do research — research on instructional effectiveness,* as opposed to research in an academic discipline.

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FOOTNOTES

[1]W. J. McKeachie, "Research on Teaching at the College and University Level," in N. L. Gage, *Handbook of Research on Teaching* (Chicago: Rand McNally, 1963), Chap. 23, pp. 1118-1172.

[2]*Ibid.*, p. 1155.

[3]*Ibid.*, p. 1164.

[4]*Ibid.*, p. 1132.

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JC 660-101
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JC 670-241
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